DOCUMENT RESUME

ED 370 537 IR 016 681

AUTHOR Chubb, Beverly
TITLE Using a Mnemonic Approach To Teach Fourth Graders To Use a Computer Keyboard.
PUB DATE Feb 94
NOTE 123p.; M.S. Practicum report, Nova University.
PUB TYPE Dissertations/Theses - Practicum Papers (043) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS *Computer Assisted Instruction; *Courseware; Grade 4; Intermediate Grades; *Keyboarding (Data Entry); *Mnemonics; Pretests Posttests; Problems; Teaching Methods; *Typewriting

ABSTRACT

This practicum addressed the problem of fourth grade students who watched their fingers and used the "hunt and peck" method while answering questions in curriculum-based software. The following objectives were established: at the end of the 15-week practicum period, all of the 22 targeted students will demonstrate at least 80% accuracy in correct finger placement on the alphabetic keys; and all of the 22 targeted students will apply their keyboarding skills in a word-processing situation. The solution strategies included a mnemonic approach to teach the entire alphabet keyboard in one lesson; age-appropriate drills and games; a project for reinforcement of the mnemonic lesson; and a computer program for practice. The success of the program was measured by the results of a pre- and posttest, teacher observation of keyboarding techniques, and students' use of keyboarding skills in critical-thinking skills applications. Although the stated objectives were not met, it was concluded that the program was a success because the students who displayed good effort succeeded by displaying keyboard mastery and application. Poor effort on the part of the students who did not meet the stated objectives mainly contributed to their low scores. (Contains 20 references.) (Author/MES)

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ED 370 537

USING A MNEMONIC APPROACH TO TEACH FOURTH GRADERS TO USE A COMPUTER KEYBOARD

by

Beverly Chubb

A Practicum Report

Submitted to the Faculty of the Abraham S. Fischler Center for the Advancement of Education of Nova University in partial fulfillment of the requirements for the degree of Master of Science.

The abstract of this report may be placed in a National Database System for reference.

February/1994

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Abstract

Using a Mnemonic Approach to Teach Fourth Graders to Use a Computer Keyboard.
Chubb, Beverly, 1994. Practicum Report, Nova University, Abraham S. Fischler Center for the Advancement of Education.
Descriptors: Computer Uses in Education/Computer Assisted Instruction/Mnemonics and Learning/Critical Thinking Skills/Keyboarding (Data Entry)/Typewriting/ Elementary Education/Word Processing.

This practicum addressed the problem of fourth grade students who watched their fingers and used the "hunt and peck" method while answering questions in curriculum-based software. Wetzel (1985) stated that when students have good keyboarding skills, they can concentrate on problem solving and composing. The author established the following objectives: At the end of the 15-week practicum period, all of the 22 targeted students will demonstrate at least 80 percent accuracy in correct finger placement on the alphabetic keys; and all of the 22 targeted students will apply their keyboarding skills in a word-processing situation. The solution strategies included: a mnemonic approach to teach the entire alphabet keyboard in one lesson, age-appropriate drills and games, a project for reinforcement of the mnemonic lesson, and a computer program for practice. The author measured the success of the program by the results of a pre and posttest, teacher observation of keyboarding techniques, and students' use of keyboarding skills in critical-thinking skills applications. Although the stated objectives were not met, the author concluded the program was a success because the students who displayed good effort succeeded by displaying keyboard mastery and application. Poor effort on the part of the students who did not meet the stated objectives mainly contributed to their low scores. Appendices include: Keyboarding Klass record sheet, a keyboard chart that the students color-coded and kept above their keyboards, a timeline for activities, the narrative of the mnemonic story, UltraKey skill check sheet, a sample drill sheet, a sample of two students' mnemonic sketches, a photo of the keyboard table top, and a sample of a student's graph.

Authorship Statement

I hereby testify that this paper and the work it reports are entirely my own. Where it has been necessary to draw from the work of others, published or unpublished, I have acknowledged such work in accordance with accepted scholarly and editorial practice. I give this testimony freely, out of respect for the scholarship of other workers in the field and in the hope that my work, presented here, will earn similar respect.

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Practicum Title Using a Mnemonic Approach to Teach Fourth Graders to Use a Computer Keyboard

Student's Name Mrs. Beverly Chubb

Project Site Ft. Lauderdale Date February 23, 1994

Observer's Name C. Kay Snyder (*please print*) C Kay Snyder (*please sign*)

Observer's position Department Chair Phone # 771-4600

Observer's comment on impact of the project (handwritten):

This practicum was implemented with my fourth grade class. I worked closely with Mrs Chubb coordinating completion of the various elements with my students. I found it both interesting and encouraging that 85% of my students turned in computer generated, written book reports at the end of the second quarter of the school year. This showed both enthusiasm for the computer as a word processor as well as a comfort with keyboarding skills. Likewise, I have observed that all of my students are using correct

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CHAPTER I

Purpose

Background

A private, Christian, early childhood through senior high school located in a middle-class neighborhood in South Florida was the site for this practicum. The school was founded in 1971 by a Protestant church and was governed by a Board of Trustees approved by the Session of that church. Admission to the school was open to children of active members of all local Christian churches.

During the year in which this practicum took place, 920 students enrolled. Tuition ranged from $1,140 for part-time preprimary students to $5,295 for senior high students. Financial assistance was provided to accommodate children of all economic backgrounds: The school gave over $300,000 in financial assistance during the school year in which this practicum took place.

The Southern Association of Colleges & Schools (SACS), Florida Council of Independent Schools (FCIS),

Christian Schools of Florida (CSF) and Florida Kindergarten Council (FKC) accredited the school. The school employed 71 fully certified teachers; 55 percent with advanced degrees. The mean IQ of the high school students was 112, and abilities ranged from average to gifted. Approximately 98 percent of the graduates went on to college.

The school had three computer labs: an IBM lab, a Macintosh lab, and an Apple IIe lab. The Apple IIe lab was used for preprimary through sixth grade students and was the lab used for the implementation of this practicum. Most of the computers in the Apple lab were 3-years old and were obtained through a joint promotional effort between Apple Computer Corporation and a local supermarket. Parents of students saved register receipts from the supermarket and submitted them at the end of the promotional time. The receipts were redeemed for Apple computers. The lab housed 26 Apple IIe computers and one printer. The computers each had a 5 1/4 inch disk drive. They were not networked.

The author of this practicum was the elementary computer lab facilitator and was responsible for

preprimary through fifth grade students. Additionally, the author co-taught a sixth grade computer class. The author had 6 years of full-time teaching experience in business subjects in high school and 6 years part-time experience teaching typing in postsecondary and adult education and accepted a position in the private Christian school 2 years ago. The author's background also included various jobs in secretarial and word-processing positions.

The school's philosophy about the use of the computer lab was essential to the purpose of this practicum. When early childhood and elementary school students (preprimary through fifth grade) were scheduled to use the computer lab, they were not taking a "computer course" and were not learning to program or to use the keyboard correctly. Word processing, data base, or spreadsheet programs were not taught either. Rather, the students used the computers to reinforce classroom subjects and skills with the appropriate available software. The classroom teachers accompanied their classes to the lab and participated in classroom management, student instruction, and student assistance. The teachers and the author planned the

lab activities based upon the teachers' prescription for their classes. A brief discussion of the computer curriculum for the fourth grade follows.

Scott, Foresman and Company produced a computer program, Running Free, that was used by the fourth grade classes as a supplement to their reading program. The fourth grade teachers had, for the past 2 years, scheduled a 1-hour weekly computer lab time because the reading program took approximately 40 to 55 minutes for the students to complete. After students completed a unit in their reading books consisting of three or four stories, they used the computer program to review the unit prior to the test they took on the unit in their classroom. Usually, one 1-hour computer lab session per month was used for the computer reading program. In addition to being a valuable study tool for the unit test, the students also received a grade from the teacher based upon the points earned in the computer program.

The Running Free program contained seven activities per story. A brief description of each, including needed keyboarding skills follows:

Punctuation--A passage of the story appeared on the monitor with missing punctuation. Students were to type in the missing punctuation. The space bar was pressed if no punctuation was required.

Sequence--The top half of the computer screen displayed a sequence of events from the story with five missing sentences. The bottom half of the screen listed the missing sentences, numbered one through five, but in incorrect order. The students had to type the correct number in the missing five spots on the top half of the screen.

Word Scramble--After reading a passage on the computer screen, the students pressed RETURN. Five words were then removed from the passage and replaced with a blank. These words appeared scrambled in a box at the bottom of the screen. The students had to select a word, unscramble the word, and place it correctly in the text using the arrow and the RETURN keys.

Clue Words--Text was presented with five missing words numbered one to five on blank lines. The bottom of the screen contained a clue for each missing word.

The students had to figure out and type each missing word.

Word Builder--A hint was given for a vocabulary word, and blanks representing the letters in the word appeared. The students had eight tries to identify the word by typing a guess and pressing RETURN. If a letter of the guess was correct, it appeared in the blank; if it was incorrect, the computer printed a < (closer to A) or a > (closer to Z) to help with the student's next guess.

Reading Quiz--A reading comprehension question was given based upon the story. Reading quizzes could require multiple-choice, yes-no, or short answer responses.

Reading and Writing--A writing assignment was given defining the topic. The students had up to eight lines to type the assigned passage. Six vocabulary words were given; the students included as many of the six words as possible in the passage.

The Challenge--Upon completion of the other activities, the students used points earned to figure out four questions and answers based on the stories in the unit. The students could "buy" a word in a

question or a letter in an answer. When the students knew the answer, they keyed it in.

The fourth grade students used a program, Spellagraph, produced by Silver Burdett Company, the publisher of their science book. The classroom teacher informed the author when a science test was scheduled. The computer lab session was then used to review science vocabulary words and definitions from the chapter using the computer program, which was in a "concentration" type game format. The students read a definition on the screen and had to identify the correct science vocabulary word in a fill-in-the-blank format. Upon filling in the blank correctly, a box was uncovered to a puzzle. When the students uncovered enough boxes, a guess could be made to solve the puzzle. The answers were phrases or short sentences that had to be typed in correctly.

Two math programs used by the fourth grade students were Math Blaster Plus, by Davidson and Meteor Multiplication, by Educational Information Systems, Inc. Both of these were drill and practice programs in enjoyable space-game formats. The number keys, arrow keys, and space bar were used for these programs. The

reading program was used once per month. The teachers usually scheduled Spellagraph and Math Blaster Plus or Meteor Multiplication during the other lab times. The author's evaluations of all the software discussed in this report are in Appendix A:76.

Problem Statement

The author identified the problem of the students at the practicum site's needing to learn keyboarding skills. During the first year as facilitator, the author observed students using programs, particularly at the fourth grade level, which required keying in words, phrases, and short paragraphs. Because the students did not have correct keyboarding skills, they all used the "hunt and peck" method with their index fingers and had to search the keyboard for the letters. Because the author's background was in teaching typing, it was readily apparent that learning proper keyboarding skills would prove useful to these students.

The demands of the junior high and high school curriculums provided a further motivation for the need to teach keyboarding skills to the elementary students.

As previously stated, 98 percent of graduating students attended college. To better meet the needs of the graduating student in the academic area, the school increased the graduation requirements beginning with the 1989-90 school year. The changes included: an increase from 24 to 26 in the total credits required for graduation, an increase in social studies credit requirements from three to four, and the addition of a Latin course by the end of the junior year. The students could fulfill the language requirement of 2 years of the same language by taking a second year of Latin or by taking 2 years of another language plus the 1-year Latin requirement.

The increased academic demands limited the elective choices available to students. Coupled with the increasing need to develop computer knowledge and skills, it was important that the students developed keyboarding competency before entering high school. Junior high students chose between band, orchestra, and keyboarding as their one elective. In the face of this competition, keyboarding often finished last. The obvious choice for teaching basic keyboarding skills was at the elementary level. This posed a problem:

How could proper keyboarding skills be taught while complying with the philosophy of the lab as a place of classroom skills reinforcement?

During the past school year, the author used 15 minutes of the 1-hour weekly lab time to introduce and teach keyboarding skills to the fourth grade students. This was done only 3 times per month because the fourth session was set aside for the reading program. By the end of the school year, the students practiced home row and most of the alphabet keys. However, because of the limited time spent on practicing the keyboard, the students displayed little or no integration of what they learned when they used reading and science computer programs.

It was customary for the principal to meet with each teacher at the end of the school year to discuss the year and to establish goals for the upcoming year. The principal supported the need for and importance of teaching keyboarding and so did both fourth grade teachers. The principal and this author determined that the fourth grade would be the appropriate grade for keyboarding instruction based on teacher input and scheduling limits. The time spent (15-minutes weekly)

on keyboarding at the fourth grade level was determined to be inadequate. The principal and the author concluded that additional time needed to be spent to teach and allow practice time for keyboarding. To accommodate the extra time, the principal suggested that the school day be extended 15 minutes at the fourth grade level (a change of dismissal time from 2:45 to 3:00). The fourth grade students would not necessarily meet for computer lab during the last 15 minutes of the day, but extra time would be scheduled some time during the week. The principal sent a memo (Appendix B:83) to the author confirming the results of the conference.

The target group for this practicum was a fourth grade class consisting of 12 females and 10 males. The target group was one of three homogeneously grouped fourth grade classes. The students in this group were considered academically above-average. One of the 22 students was new to the school.

During the first fourth grade computer lab session at the beginning of the school year, the author spent 15 minutes explaining classroom rules and the fourth grade computer program. The author gave the students

timed writings as a pretest. The author told the students the pretest would be used as baseline data against which the author would check their progress throughout the school year. The author also told them that because they had no formal instruction in keyboarding, they could type the pretest in any way they felt comfortable. To alleviate any stress, the author emphasized that the pretest would not be graded. The computer program used, Keyboarding Klass, by Mastery Development automatically computed words per minute based on a three-line sentence that the student had to type. A sample sentence from the Keyboarding Klass program was: "The old station wagon bumped and squeaked as Tim and his mother crossed the rusty railroad tracks" (Keyboarding Klass, 1988). The author instructed the students to record their results on a Keyboarding Klass Record Sheet that the author prepared (Appendix C:85). The author circulated around the room while the students took the timed writings and made a notation of "yes" or "no" on a finger placement observation form for each student; "yes" represented correct placement of fingers, and "no" represented incorrect placement (hunt and peck method).

The pretest results indicated that 100 percent of the fourth grade students used incorrect finger placement and watched their fingers while typing. Therefore, 100 percent of the students did not use correct finger placement and did not type without looking at their fingers on the keyboard. The author, in conjunction with the principal, determined that all the students should type using correct finger placement without looking at their fingers on the keyboard.

Each student took one to three timed writings on the Keyboarding Klass pretest. The highest score was 16.7 words per minute; the lowest score was 2.7 words per minute. The complete results can be seen in Table 1.

Table 1

Pretest
Keyboarding Klass Timed Writings

Student Number	Words Per Minute--Best Score
1	9.3
2	8.7
3	16.7
4	13.8
5	5.5
6	5.9
7	7.1
8	7.8
9	2.7
10	4.2
11	3.4
12	7.7
13	6.0
14	5.1
15	3.4
16	6.6
17	5.8
18	5.8
19	4.7
20	7.8
21	8.5
22	5.1

The author planned to devise a method to teach all students to use the keyboard correctly (correct finger placement and without looking at the keyboard) so they could efficiently use computer programs.

Outcome Objectives

Based upon the analysis of the data compiled, the author set the following objectives for the practicum:

Objective One

During the fourteenth and fifteenth weeks of implementation, all of the targeted 22 fourth grade students will demonstrate at least 80 percent accuracy in correct finger placement on the alphabet keys. The author will evaluate each student by watching them key a sentence containing each letter of the alphabet. The author will hold an 8 1/2 inch by 11 inch paper above the keys so that the student cannot see the keys but the author can. The author will watch each student and note errors above the letters on a separate copy of the alphabetic sentence.

Objective Two

All of the 22 targeted students will apply their keyboarding skills when they do the Reading and Writing section of the Running Free computer program. The author will evaluate this objective by observing the students as they word process their answers to the Reading and Writing section of the Running Free computer program. This objective will be met if all the students are observed with their hands on home row as opposed to using their index fingers in a "hunt and peck" fashion. The author will record the students' performance on a check-off sheet.

CHAPTER II

Research and Solution Strategy

Research

A little over a decade ago, computers were just beginning their entrance into the educational realm; today, they are an integral part of school from the elementary through university levels. Typewriting used to be a subject taught at the high school level; there was really no need to teach typing skills to younger children. However, the advent of the "computer age" has shifted the focus for teaching keyboarding skills to younger students. The difference between typewriting and keyboarding was explained by Jackson and Berg (1986:8):

> Keyboarding, simply defined, is learning the correct manipulation of the keys on a computer/typewriter keyboard and using that keyboard for basic data input. Typewriting is the continued development of keying skills and the use of those skills to produce output in a variety of applications, such as in the creation of letters, memoranda and reports.

A foundational question to be raised is, "Is keyboarding instruction really necessary for elementary school-age children?" Dalton et al. (1988:11)

discussed the results of a writing project conducted by five teachers (two of whom team-taught) of four fourth-grade classes at three schools. Of the five teachers, only two gave their students keyboarding instruction prior to beginning the writing project. The students used the computer for the writing project 2 to 3 periods daily for 7 months. Dalton et al. (1988:11) found that:

> Although students who received no direct instruction appeared fairly competent on the keyboard during the first few months of the project, when writing assignments were relatively short, their weak typing skills became evident during the latter part of the year when they began to write more extended pieces on the computer. Frustrated by their inability to type quickly and accurately, some students bemoaned the fact that it took so long to write on the computer--writing longhand in their themebooks was a pleasant alternative since their fluency was unimpeded by their weak typing skills.

Kercher and McClurg (1985:3) studied two fifth-grade groups; one group had formal keyboarding instruction, the other did not but spent an equivalent amount of time working at the computer. Timed writing rates for the group that received formal instruction "ranged from 9 to 40 gross words per minute" while the

rates for the group that did not receive instruction "ranged from 4 to 10 gross words per minute." They concluded, "The amount of time spent in formal instruction seemed to be directly related to performance."

Wetzel (1985) found that inadequate keyboarding skills resulted in an unsuccessful attempt at a computers-in-composition program that Wetzel evaluated by observing classes taught by eight teachers of 8 to 10-year old students. Wetzel particularly noted the frustration level of students because they had to search the keyboard for the letters and look back and forth at their notes, keyboard, and screen, frequently losing their place. Wetzel concluded that, "Keyboarding is too important to leave to chance" (p. 15).

A question that needs to be asked is, "At what grade level is keyboarding best introduced?" A school district established a keyboarding program at the fourth grade level that took place 25 minutes per day for the first 6 weeks of school followed by language arts writing instruction using the computer three

40-minute periods per week for the remainder of the school year. They chose fourth grade because "10-year-olds have the requisite cognitive and fine motor skills to successfully learn keyboarding" and word processing could be used to improve writing by helping students "get their ideas down faster" and make revision easier (Myers and Spindler-Virgin, 1989:26,27). At the end of 8 months, results comparing the group given keyboarding instruction with a control group revealed "the control group demonstrated an overall average gain of 0.4 (on a holistic scale of 1-8), while the keyboarding group had an increase of 1.3." Keyboarding students were also more fluent, writing longer narratives: "The control group had a 53-word increase in length, while the keyboarding group had a 158-word increase." Another result was an increase in student enthusiasm. The students took pride in their work and were more interested in other writing activities (including the school newspaper).

Educators in the public school system of Lincoln, Nebraska considered options for teaching keyboarding to elementary-age students. The grade levels targeted

were fourth through sixth, with third grade optional. Younger students were not targeted because in their school system, Kindergarten through Grade three students "are likely to be involved in computer-assisted instruction modes and not in keyboarding" (Stewart and Jones, 1983:12). This was the situation at the author's practicum site. The author chose the fourth grade students primarily because by this grade students have an increased need for keyboarding skills. Balajthy (1987:86) discussed the "use it or lose it" effect on keyboarding skills:

> Touch typing instruction is a waste of time unless the children will have significant amounts of daily typing or word processing to do immediately and in ensuing years.

To teach keyboarding effectively, adequate instructional time and practice time, as well as integration of keyboarding skills into writing for other subjects are essential. Three groups of seventh grade students taking a 9-week elective keyboarding class met for 20-25 minutes per day, 4 to 5 days per week. Schellenger (1987:214) found that "students using a word processor while learning to keyboard require less time transferring keyboarding

skills to a word processing environment." Dalton et al. (1988:12,13) recommended:

> Teach keyboarding for a minimum of 3 weeks, with short frequent practices prior to any teaching of word processing skills....Follow keyboarding practice with 4 to 6 weeks teaching of carefully monitored basic word processing skills.

The role that keyboarding skills play in relation to critical-thinking skills is described by Wetzel's (1985:15) statement:

> Students who have adequate keyboarding skills use their time at the computer efficiently--that is, they can concentrate on problem solving or composing, rather than on the mechanics of typing.

The use of keyboarding skills to improve reading and writing abilities of children, according to Balajthy (1987:86) required that:

> (1) Keyboarding instruction must occur in addition to (not as a replacement for) the regular classroom reading and writing lesson; and
> (2) Keyboarding exercises must be explicitly integrated with meaningful language activities.

Because keyboarding is a skill, improvement in students' abilities are more noticeable and tangible than in some other subjects. This tangible improvement

is a key to motivation because students' success generates motivation. Saka (1986:304) taught keyboarding skills to five subjects (three males and two females) who were developmentally disabled. The subjects' ages ranged from 20 to 34, and their disabilities included: cerebral palsy, infantile autism, mild mental retardation, and a combination of the preceding. Saka found that, not only did the greatest "gain in typing speed" occur after they "attained the skills necessary to use the entire keyboard," but also "...the subjects also began to display greater levels of self-confidence...". Saka concluded that effective keyboarding abilities allow the operators to feel "in control of the machine, thus, increasing their self-confidence in using the computer" (p. 298).

Two university workshops were held: "to prepare business teachers to teach keyboarding to elementary students; and, second, to prepare elementary teachers to assist the business teacher" (Williams, 1988:27,28). The 1-week workshop for the business teachers met daily for 2 hours of classroom instruction. The teachers

also participated in a 1-hour lab with summer school elementary students. Williams (1988:28) stated:

> The goal was to acclimate the teachers to working with an age group that was different from their normal clientele and to encourage them to initiate a planned program in their respective school districts.

The 3-week workshop met daily for 2 hours with the elementary school teachers and daily for 1 hour with the students. Williams established these goals for this workshop:

> (1) to help the elementary teachers understand the psychology of skill building and
> (2) to assure consistency of expectations of techniques used by the students when the business teacher was not present (p. 28).

Williams also made note of two interesting observations: "the business teachers tended to incorporate their businesslike approach into their teaching style--even with young children" and "the elementary teachers did not realize that they did not know how to teach keyboarding." It was therefore, incumbent upon the business teacher and elementary teacher to responsibly prepare themselves for the task of teaching keyboarding skills to elementary students.

An outline prepared by Williams for the workshop and titled, "Topics for Workshop to Prepare Elementary School Staff to Teach Keyboarding to Elementary School Children," included "Development of interest and self-confidence" as a factor "influencing learning behavior." A section entitled "Providing motivation--behavior of the teacher," included the following:

1. Assure active learner participation.
2. Help children attach meaning to learning.
3. Add vividness to the learning.
4. Provide appropriate amount and kind of guidance.
5. Control positive and negative transfer.
6. Control the sequence and difficulty of learning tasks.
7. Control the kind, amount, and schedule of reinforcement.
8. Evaluate processes as well as products of learning (p. 28).

In an effort to seek an effective, interesting, vivid, innovative, and age-appropriate approach to teaching elementary students keyboarding, the author of this practicum attended a seminar (Grupp and Laube, 1993) in the spring of the past school year. The seminar consisted of a 2-hour session after school in the computer lab, followed by another 2-hour session a week later. Eight fourth-grade students (five girls

and three boys) paid a fee and attended the seminar. A teacher and a psychologist conducted the seminar to demonstrate the method to teach keyboarding using accelerated learning techniques they developed in Germany. They were in the United States for several months to "field test" their method. Other than their handouts for students, they had no printed materials about their work. The author observed and took notes on their techniques and on the progress made by the students.

Grupp and Laube used music, relaxation techniques, and mnemonics to introduce the keyboard to the students. During the first session, Grupp and Laube told the students to "take a little trip in your imagination." While gentle music was playing, Grupp and Laube asked them to close their eyes, relax, and imagine themselves sitting on a bench eating a juicy red apple. They were to visualize a bucket of red paint and to dip their left pinkie into the red paint; as they visualized this, they were to tap their left pinkie on their laps. Using this technique of visualizing a picture with an associated color, Grupp

and Laube had the students visualize each of the home row keys as one key was linked together in a story fashion.

After completing the home row keys, Grupp and Laube separated the class into two groups by sex. Each seminar leader took a group, formed a circle, and played a review "game." The leader called out a color and tossed a ball to a student at random. The student had to tap the ball with the appropriate home row finger/s and state the visual image associated with it. Each student had approximately two or three turns.

This activity was followed by a computer activity. One of the seminar leaders dictated a word using home row keys that the students were to type three times on the computer. The other seminar leader assisted students. After approximately 10 minutes, the students received a 15-minute break.

Upon returning from the break, Grupp and Laube taught the students the top row of alphabet keys using the same procedure as above. The students played the ball game as review. Finally, Grupp and Laube gave the students a sheet of paper with columns of words. The

students had to use the home row and the top alphabet row to type on the computer. Both seminar leaders assisted the students as they practiced their word lists. After approximately 10 minutes of practice time, Grupp and Laube dismissed the students with an assignment: They were to practice their word list for 10 minutes each day until they returned the following week.

The following week, one student and one seminar leader were absent because of illness. The other seminar leader reviewed the previous week's work and questioned the students about the time they had spent on practice during the week. None of the students practiced every day; three of the girls practiced "often;" one girl and the three boys practiced "a little." After reviewing the previous week's work, the leader used the music, relaxation, mnemonics approach to teach the bottom row to the students. This was followed by the ball game and a word list to type. Finally, the leader taught the top number row using the same procedure. The ball game and a drill sheet

followed. The seminar leader encouraged the students to continue to practice at home.

The author of this practicum made the following observations: Student success was directly related to the extent with which they "bought in" to this approach. During the time the students were to have their eyes closed and were to be simultaneously visualizing and tapping their appropriate home row fingers, one boy in particular was not very cooperative. This boy had the most difficulty in recalling the proper fingers and visual images during his turns in the ball game and took the longest to complete his word list. The other two boys and two of the girls displayed moderate cooperation in tapping out the keys. The three girls who cooperated the most did the best during the ball game. The girls, overall, performed the best on recall of the fingers and also completed their word lists before the boys. The boys tended to be silly, which affected their attention. The major difficulty was that the leader had no control over (or knowledge of) whether or not the students were actually paying attention and visualizing when the

leader told the story. This became apparent later when the students could or could not recall the word pictures during the ball game, but by then the story-telling time was history.

Despite the silliness on the part of the boys, the students did seem to enjoy the novelty of the activities, especially the ball game. As previously mentioned, the girls completed their word lists quicker than the boys; however, they were all capable of typing the lists by the second session because the leader covered the entire keyboard by then. Practice time was a crucial factor, reinforcing the "use it or lose it" principle. The students who practiced between the first and second session did better at recall and with their words lists during the second session. Even at the end of the second session, practice was still needed and encouraged.

The idea of using a mnemonic approach for teaching the keyboard appealed to the author of this practicum primarily because the keyboard could be taught much quicker, freeing up more time for the students to practice, reinforce, and integrate skills. With the

anticipation of incorporating mnemonics into this practicum strategy, the author read several books on memory (and its improvement). The word mnemonics

> is derived from Mnemosyne, the name of the ancient Greek goddess of memory.... 'Mnemonics' refers in general to methods for improving memory; a mnemonic technique is any technique that aids the memory (Higbee, 1988:94).

To memorize a list using the Link mnemonic system, a chain of associations is formed by linking a visual image for the first item to a visual image for the second item. The second item is then linked to the third item and so on through the list. A variation of the Link system is the Story system. In the Link system, each item is linked to another "independently of the previous links; in the Story system you link the items in a continuous, integrated sequence" (Higbee, 1988:135).

Lorayne and Lucas (1974:15,16) mentioned four rules to help with linking words together: substitution (to link the word "tree" to the word "airplane" picture the "tree flying instead of an airplane"), out of proportion (use words such as huge or gigantic), exaggeration (visualize "millions" of

something), and action. Lorayne and Lucas tried to make their word pictures ridiculous so they would "register in your mind." Higbee (1988:104-107) suggested three rules for effective visual imagery: interaction (one item "doing something to or with the other"), vividness (visualizing a mental picture that is "clear, distinct, and strong"), and bizarreness ("unusual, weird, implausible, incongruous, ludicrous"). However, Higbee noted that of at "least 30 research studies on the effectiveness of bizarre versus plausible imagery...no difference...in their effectiveness" was found. Higbee's advice was: "If you find it difficult to make up bizarre images...concentrate on making the images interacting and vivid--do not worry about making them bizarre" (p. 108).

Higbee (1988:212) quoted from, What Works, by the U.S. Department of Education: "Mnemonics help students remember more information faster and retain it longer." Because the letters on the keyboard are not in alphabetical order, or any other logical order for that matter, they must be memorized. Hence, a mnemonic

approach can be beneficial in helping students to memorize letters that traditionally are memorized strictly by drill work.

The role of mnemonics in the critical-thinking process is further explained by Higbee (1988:216):

> Mnemonics...may facilitate...learning by providing the 'conceptual glue' necessary to hold...disparate pieces in memory. As a person begins to fit the pieces together, mnemonics may play a less important (or different) role, and other factors may be more important.

Efficient memorization of facts can, therefore:

> ...free us to spend more time and effort on the more advanced goals...such as understanding and applying principles, critical and creative thinking, reasoning, and synthesizing (Higbee, 1988:215, 217).

In summary, keyboarding is best taught when word-processing skills are needed. When keyboarding skills are developed, students can spend time on applications using critical-thinking skills rather than on searching for keys. Teachers should prepare themselves to teach keyboarding skills to younger students. One innovative method is to teach the keyboard using mnemonic techniques to aid in memorizing the location of the keys.

Solution Strategy

Older elementary students (in the author's situation--fourth grade students) were the likely candidates for keyboarding instruction because these students generally used computer programs calling for keyboarding skills. The research findings reinforced the author's selection of the fourth grade as the target grade; Dalton et al. (1988), Kercher (1985), Stewart and Jones, (1983), Schellenger (1987), Myers and Spindler-Virgin (1989), and Balajthy (1987) worked with students in fourth grade or higher. Grupp and Laube (1993) began the entrance requirement for their seminars at third grade.

Balajhy (1987), Dalton et al. (1988), Myers and Spindler-Virgin (1989), Schellenger (1987), and Wetzel (1985) indicated the need to apply keyboarding skills to writing for other subjects using word processing. Based upon their findings, the author decided to emphasize the entire alphabet keyboard quickly and efficiently to allow maximum time to practice and apply the keyboarding skills. The top row of numbers and symbols were not taught for two basic reasons: lack of

time and little use of these keys. The fourth grade students did not use computer programs that required extensive number and symbol use. The math computer programs required the arrow and space bar to be used so often that correct finger placement on the keyboard would actually hinder the students' speed in answering the math problems. The author incorporated keyboarding skills primarily with the Running Free reading computer program. This began with the first reading unit. At first, the students' speed on the keyboard was very slow, but, as their keyboarding skills improved, the author anticipated that the increase in their writing capabilities would serve to give them a feeling of accomplishment and success, as Saka (1986) found.

Williams (1988), at the workshops for business and elementary teachers, stressed the importance of gearing teaching techniques to a younger audience. The mnemonic story system can be an effective aid for students in memorizing the keyboard. The author used a mnemonic approach in the story form to teach the fourth grade students the alphabet keyboard based on research emphasizing mnemonics' effectiveness in the

memorization process as expressed in the work of Higbee (1988), Lorayne and Lucas (1974), and Grupp and Laube (1993). The author devised a mnemonic story that was different from the one used during the Grupp and Laube seminar and eliminated the teaching of the top number row and the use of specific colors for each finger. Grupp and Laube associated a visual picture and a color with each key. The color was the same for the corresponding finger of each hand: pinkies were red, ring fingers were blue, middle fingers were yellow, and index fingers were green. The author chose to eliminate the use of color for finger positions primarily because the author had a keyboard chart hanging on the front wall facing the students that was color-coded to indicate the finger positions; however, the color code of the chart was not the same color code used by Grupp and Laube. Specific colors for each finger position were not included in the solution strategy because the author did not want the color of the chart to interfere with the visualization factor and wanted the students to use their creativity to form

their images. The author only suggested color when it was important to the mnemonic story.

Based upon observation of the students' interest in the ball toss game, the author decided to provide interesting activities to review and reinforce the mnemonic visual symbols. The Grupp and Laube seminar was limited to small groups (two to five students per seminar leader). Although the ball toss activity was an excellent review and was enjoyed by the students, it was a game suited for a small group. The author included enjoyable activities suitable for a large group. To ensure active participation in the visualization exercises, the author provided frequent checks (quizzes, games) and observed the fingers of the students on the keyboard.

Balajthy (1987), Jackson and Berg (1986), Myers and Spindler-Virgin (1989), and Wetzel (1985) recommended the use of computer keyboarding tutorial software programs that: show finger positions through the use of graphics, give instruction on correct technique, are self-pacing, provide for language arts activities, and provide motivation and feedback. The

author chose a new program, UltraKey, because it met these criteria for use in keyboarding practice. The students kept records of their progress while using the UltraKey computer software program. Not only did the students' recordkeeping responsibilities strengthen their management skills, but also, the results served as a tangible record of their progress and instilled in them a feeling of satisfaction and success. Saka (1986) and Williams (1988) stressed that self-confidence, success, and interest were vital motivational factors that influence learning behavior.

As Wetzel (1985) suggested, the author did not want to teach keyboarding skills as an end in itself but planned to integrate and synthesize them to aid critical-thinking and word-processing applications. The Reading and Writing practice section from the computer reading program, Running Free, was the primary point of integration. The Reading and Writing section afforded the students practice in critical-thinking skills because students had to use their vocabulary words to answer comprehension and thinking skills questions such as: "cause and effect, drawing

conclusions, predicting outcomes, main idea and supporting details, and summarizing" (Running Free--Teacher's Guide, 1989:9).

CHAPTER III

Method

For the school year in which this practicum took place, the administration provided extra time in the computer lab for fourth grade students by extending their school day by 15 minutes. The author set up the computer lab schedule when the teachers reported to work, 1 week prior to the opening of school for students. The author met with the physical education, art, and music teachers to correlate the times for special activities. The author then met with all the preprimary through fifth grade teachers to schedule their classes in the lab. The author carried out all phases of the implementation. The author's co-teacher helped the author monitor the students as they progressed through the activities.

The fourth grade computer lab schedule reflected a 1-hour lab time plus two 15-minute lab times during the week. As previously mentioned, during the first 1-hour session of class prior to beginning the

implementation, the author told the students the rules of the lab and gave them timed writing tests as a pretest. Additionally, each student brought crayons or colored pencils to class and color-coded a keyboard chart (Appendix D:87). The students colored the charts to match the keyboard wall chart in the computer lab. The author instructed the students to keep the charts in their computer folder and to bring the chart with them each class day. The students always had to have their color-coded charts on top of their keyboard as an aid in learning the proper finger reaches. The author checked each chart upon completion to see that the students colored them correctly.

The author originally prepared a timeline of the schedule of activities for a 12-week practicum implementation. Midway through the implementation period, the author increased the timeline to encompass a 15-week implementation period. Appendix E:89 contains the 15-week timeline activities. The author needed the additional time because of three missed scheduled classes by the target group and because two extra 15-minute sessions were scheduled to practice the shift keys. Approximately once per month, when the

students completed their reading unit in their fourth grade class, the author used the 1-hour lab session for the Running Free computer program. When the reading program was not being used, the 1-hour session was split in half and used for keyboarding and math or science. The author used the two 15-minute lab times for keyboarding instruction and practice, using the UltraKey computer program and drill sheets.

Mnemonic Lessons

During the first week of this practicum implementation period, the author used the 1-hour session to introduce and teach the mnemonic story. After introducing the students to the concept of mnemonic learning and instructing them on what to expect during the lesson, the author presented to the class the mnemonic story written by this author (Appendix F:92). Based upon the Grupp and Laube seminar (May, 1993), the author played gentle music during the lesson. The author asked the students to place their hands on the home row keyboard and to gently tap the appropriate keys as the story progressed. The students closed their eyes as they

visualized the pictures. The author and the fourth grade teacher walked around the room while the story was told to observe the students' fingers. Because the students had to concentrate on gently tapping the correct keys, they had to pay attention to the story.

After reading the story for the left-hand keys, the author turned off the music and conducted a review activity. During this activity, the author used a pointer to point to a letter on the left-hand side of the keyboard chart on the wall and randomly called a student's name. The author first pointed to the letters in the order they were presented in the story and then in random order. The student had to recite the appropriate image. The author then turned the music back on and continued the story for the right-hand letters, followed by the review drill of the right-hand letters.

The author conducted a second activity where the author pointed to and dictated letters that made simple words while the students keyed the letters on the computer. The author turned the computers on, but kept the monitors turned off so the students could not see

what they were typing. The author encouraged the students to look at the keyboard chart on the wall and not at their fingers while this activity took place. The author reviewed the images and home row fingers as the letters were dictated. For example, the word "run" would be dictated: "Reach your 'f' finger up and type 'r' for 'red;' reach your 'j' finger up and tap 'u' for 'up' and reach your 'j' finger down and tap 'n' for 'nest.'" After the author dictated 10 words, the students turned their monitor lights on and checked the accuracy of their typing while the author read the list of words. The author allowed 15 minutes for the introduction, 20 minutes each for the mnemonic story and review activity for each hand, and 5 minutes for the dictation activity.

The author used the second and third (15-minute) computer lab sessions for a review of the mnemonic story. The author reviewed the mnemonic story while the students tapped the keys gently, keeping their eyes closed while the music played in the background. The review took approximately 5 minutes. For the remainder of the time (10 minutes), the students keyed in words on the computer as the author dictated them, using the

same method as in the first session. The author and the fourth grade teacher walked around the room, observing and assisting the students.

The first three sessions gave the students the knowledge of the entire alphabet keyboard, including four symbols (comma, period, semicolon, diagonal). The author expected the students to use the correct fingers on each key when they did the keyboarding assignments, as well as when they worked on their reading and science computer programs. They always had their color-coded keyboard charts above their keyboards for reference as to correct finger position.

UltraKey

The school purchased a site license for the UltraKey program; therefore, the author gave all the students their own copy of the computer program disk to use in the computer lab. (The author kept the disks in the lab.) The author introduced the UltraKey computer program during the first half of a 1-hour session. The author used an LCD panel on the overhead in the computer lab to guide the students with the preliminary process of opening a file on their disks. The author

also showed the students the various menu components of the UltraKey program. The introduction of the UltraKey computer program and the opening of the student files took 30 minutes. The author used the remaining 30 minutes of class to explain the Running Free reading program and introduce the reading activities using the LCD panel. A description of the UltraKey computer program and how the author used it follows:

The students opened their files in UltraKey by first typing in the date, followed by their group name, then their name. (They used the name of their classroom teacher for the group name.) Two menu items on the computer program, "Posture" and "Fingers," were not covered because the author explained posture and home row location during the introductory lesson and reviewed them each class period during the first 3 weeks of class. The "Lessons" menu contained the following lessons for the alphabetic keys:

1a J K L ;
1b A S D F
2 I T .
3 O R N
4 H E P
5 W M C
6 G Y , Shift
7 U B

8 V X
9 Q Z

Lesson 1a began with Introduction and continued to Letter Practice. Each of the other lessons contained the following:

1 Introduction.
2 Letter Practice.
3 Word Practice.
4 Sentence Practice.

The Introduction section and Letter Practice section contained only the new keys. The Word Practice and Sentence Practice sections included letters from earlier lessons. After the students completed each section, they had the option of pressing R to review the same section or spacebar to go on to the next section. The first three sections included the graphic of hands on a large keyboard correctly reaching for and pressing the key that the student was about to type. The Sentence Practice section did not include this graphic.

The UltraKey program provided for a skill check upon completion of the lesson. The Skill Check section had three choices: one, two, or three paragraphs. The author had the students choose one paragraph on each of the Skill Checks. After the student typed in the

paragraph, the computer program analyzed it, and the computer screen showed the results. Accuracy was shown as a percent and speed as words per minute, each with a red line graph below the figures. Errors were quantified into the categories of: wrong keys, missed keys, and extra keys with the amount of errors above each. The screen then showed the student's total errors. Each of the error sections had a corresponding red bar graph depicting the amount of errors. The computer program then reviewed the paragraph, highlighting the errors. The students, if time allowed, took more Skill Checks. Additional Skill Check analyses also displayed past performance: A red line graph ("this time") compared to a blue line graph ("last time"). The screen displayed a message of help/encouragement to the student such as: "EXCELLENT! You increased your speed by 5 WPM and kept your accuracy steady at about 99%" (UltraKey, 1993). The students recorded the results of the Skill Checks on the UltraKey Skill Check Sheets (Appendix G:102).

The UltraKey computer program provided a Skill Check Report. This report listed each lesson, the keys presented, date, number of paragraphs, accuracy, speed,

number of wrong keys, missed keys, and extra keys, and a one-word comment. The report listed the information for the best results to date on each particular lesson. The students printed their Skill Check Reports after they completed all the alphabet keyboard lessons. The Skill Check Reports were compared with the students' records on their UltraKey Skill Check Sheets for accuracy. The author originally intended to use as an objective the comparison of the printed Skill Check Reports with the students' written records on their UltraKey Skill Check Sheets as a check for accuracy in recordkeeping. However, because of several crashed disks and errors in saving work throughout the practicum implementation period, the Skill Check Reports did not include all the required information for such a comparison, so the author decided this activity would not be geared to an objective.

Activities and Procedures

The procedures for the keyboarding lessons were as follows: Each UltraKey lesson was allotted a 15-minute practice session. If the students completed a lesson before the end of the 15 minutes, they began

the same lesson again as a review. During the following 15-minute session, the students used an author-designed drill sheet (Appendix H:104) to reinforce the UltraKey lesson. The students did the Skill Check during the third 15-minute session. When the schedule allowed for a 30-minute keyboarding session, a 10- or 15-minute mnemonic review activity or a quiz preceded the keyboarding practice.

The drill sheets were compatible with the UltraKey computer program lessons, so they could be used as supplementary material. The UltraKey computer program taught both the left and the right shift keys in Lesson 6. The author added two drill sheets between Lessons 5 and 6, which allowed for practice of each shift key individually. The author did this to provide additional practice time with the shift keys based on the difficulty the past year's fourth grade class had with the shift key lessons. The author observed that the students in the target group had difficulty with the shift and added two extra sessions of work with the shift keys. The students experienced difficulty getting used to using the opposite hand to shift. Even with the additional time allowed, at the end of the

practicum period, the author observed improper shift techniques by several students.

The quiz was in the form of keyboard charts on which the students filled in the correct keys where there were blanks. The author administered the quiz in the fourth grade classroom during the fifth week of implementation. Upon completion of the quiz, the students entered the computer lab and corrected their own quizzes by comparing them to their keyboards. The quizzes served as a self-check; therefore, they were not graded, but the author did use the results to decide if any midcourse changes in the implementation were necessary. Twelve of the 22 students filled in the chart correctly; two only missed two keys; eight missed five or more keys. Because the majority of the students could fill in the chart correctly, the author did not make any changes in the implementation plan. The author knew the students would improve their knowledge of the keyboard during the remaining scheduled practice sessions. Several of the students who made the most errors were students whose effort was minimal.

The author designed the mnemonic review activities in game format. A description of the activities follow:

1. Card "pop-up" game--The author gave the students index cards on which a letter of the keyboard appeared. The author distributed the cards to the students in random order. Eight students had two cards to keep track of because there were more letters than students (26 alphabet keys and 4 symbol keys). The author narrated the mnemonic story, and when the author called the visual corresponding to the student's letter, the student quickly stood up and sat back down. The author used this game during Week 4 of the implementation period.

2. Secret message game--The author turned off the computer monitors so the students could not see what they were typing. The author called out letters along with their visual images while the students tapped the corresponding key. The author did not tell the students that the author was spelling words to a secret message. When the students turned on the monitors, they read the message, did what the message said, and checked their accuracy. The message read, "After you

read this message, stand up, clap your hands six times, jump twice, and sit back down." The author used this game during Week 7 of the implementation period.

Keyboarding Project

The author assigned a project for the students to work on in their fourth grade classrooms on the 2 days of the week when they did not meet in the computer lab. The project included: drawing an outline of each hand, labeling the fingers with the correlating keys, and pencil-sketching and coloring a sheet for each of the home row keys to depict their visual mnemonic picture. The sheets for their sketches also had a small keyboard and hand outline printed on them for additional reinforcement. A keyboarding classroom activities schedule outlined the due dates for their projects. Upon completing the pencil sketches, the students and the author checked the submissions for proper inclusion of the visual pictures for the keys. After checking the pictures, the students colored their pencil sketches during time that their classroom teacher set aside. This project served as a review of the mnemonic visuals as well as an expression of the students'

creativity. A sample of two different students' sketches are in Appendix I:106.

Running Free Reading Program

The author's purpose in teaching keyboarding to the fourth grade students was to provide them with the requisite skills needed for word-processing applications, in this case, their computer reading program. It was also at this point that their keyboarding skills assisted them in the Reading and Writing section where they had to use critical-thinking skills in a word-processing situation. The author observed the students during the 1-hour lab sessions assigned to the Running Free reading program. The author recorded correct/incorrect keyboarding skills on a finger placement observation form: "Yes," for correct finger placement; "No," for incorrect finger placement. The author also listed the keys that the students needed to practice and made comments.

The students kept their color-coded keyboard charts, to match the wall-mounted keyboard chart, above their keyboards as a reference when they used the computers. The author encouraged students to type by

"touch" and not by "sight." The author's experience with the prior year's classes served as the basis for early training in reliance on "touch" versus "sight."

Keyboard Covers

From time to time, the author used two methods to assist the students in typing by "touch": covering the keyboard with paper (with the students' hands on the keyboard, beneath the paper) and using specially designed table tops (Appendix J:109). During the year before this practicum, the author requested the table tops, and a parent volunteer made them. The wooden boards, which have removable pegs at each corner, fit over the keyboards, allowing enough room for the students to place their hands properly on the keyboards. Keyboard charts could be placed on top of the table tops for reference. Although the students could still "peek" beneath the table tops, the author found the wooden boards helpful when students tried to break the habit of watching their fingers. The only negative feature of the table tops was one of time because it took several minutes to assemble the table

tops at the beginning of class and disassemble them at the end.

Posttests

The author began individual testing of the students during week 14 of the practicum implementation period. The procedure for testing was as follows: The author made up a sentence that contained all the letters of the alphabet and taped a copy of the sentence to the monitor screen of one computer so the students sitting at that computer could not see their typing on the monitor. The author sat to the right of the student and held a sheet of paper over the student's hands so that the author was able to watch the student type, but the student could not look at the keys. The author instructed all the students to take their time as they typed the sentence as accurately as they could. If the students realized they had incorrectly typed a letter, the author would delete the letter and allow the students to retype it. Because the students could not see the monitor, they were not able to correct mistakes they did not know they made. The author observed the student's fingers

as they typed the sentence and recorded any errors on a separate sheet of paper that contained the same sentence printed in a larger font to facilitate recording errors. If the student used a wrong home row finger to type a key, the author made note of that key above the letter on the author's sheet; if the student used the correct home row finger but typed the wrong key, the author made note of that error below the letter on the author's sheet. For example, when typing the word "afternoon," if the student incorrectly used the "D" finger to type the letter "R," the author would write the letter "D" above the "R." If the student used the "F" finger to type the letter "R," but incorrectly typed the "T," the author would write the "T" below the "R." The author scored the test as follows:

1. Correct finger/incorrect key: -1 point.
2. Incorrect finger/correct key: -1 point.
3. Incorrect finger/incorrect key: -2 points.
4. Shift with incorrect finger/correct key: -1 point.
5. Shift with incorrect finger/incorrect key: -2 points.
6. Spacing error (extra space or no space): -1/2 point.

The author administered a posttest using the Keyboarding Klass computer program during week 15 of the implementation period. During the pretest, the students could look at their fingers and use any method to type the sentences. During the posttest, the author completely covered the keyboards by setting up the keyboard table tops at the computers. Additionally, the author taped a sheet of paper to the edge of the table top closest to the students so that it flapped down toward their laps, thereby making it impossible for them to "peek" at the keys.

During week 15, the author met with the fourth grade students in their fourth grade classrooms and returned their Keyboarding Klass pretest and posttest record sheets. The students, under the direction of the author and the fourth-grade teacher, graphed their progress. The author told the students they would take a final Keyboarding Klass timed writing at the end of the school year; therefore, the author instructed them to leave room on the graph for an entry in May. A sample of a student's graph appears in Appendix K:111. The students enjoyed this activity, and the product helped them visualize and evaluate their progress.

The author observed the students as they worked on the activities in the Running Free reading program during the last time the reading program was used in the practicum implementation period (week 12). The author intended the students to use their keyboarding skills to word process their answers to the activities, particularly in the Reading and Writing section when they had to use as many of six vocabulary words as they could to write a paragraph based upon the reading unit story. The students needed to use critical-thinking skills to properly complete the assignment. The author noted, on a finger placement observation form, whether or not the students used correct keyboarding techniques by keeping their fingers on home row and using proper fingers for the reaches versus using a "hunt and peck" method. If the author observed a student "hunting and pecking," the author made a notation on the observation form, and the student was reminded to use proper keyboarding techniques.

CHAPTER IV

Results

Objective 1 Results

During weeks 14 and 15 of the practicum implementation period, the author administered a posttest by testing each of the students individually. The author watched each of the students type the following sentence that contained all the letters of the alphabet and required several operations of the shift keys: Paul and Jack will visit the Quigby Zoo next Monday afternoon. As previously mentioned, the students could not watch their fingers, nor could they see the monitor screen because paper covered both. The author noted errors in finger placement on a separate copy of the sentence.

Objective 1 stated: Each of the targeted 22 fourth grade students will demonstrate at least 80 percent accuracy in correct finger placement on the alphabet keys. The results of the individual testing can be seen in Table 2.

Table 2

Individual Test
On Alphabetic Sentence

Student Number	Score
1	88
2	100
3	100
4	100
5	88
6	99.5
7	99
8	99
9	90
10	99
11	70.5
12	96
13	97
14	69.5
15	93
16	64
17	68
18	72
19	99.5
20	98
21	95.5
22	95

Five of the 22 students scored below 80 percent; 17 of the 22 students scored above 80 percent. The author's first objective was not met.

As a posttest, the students took timed writings with their keyboards completely covered using the Keyboarding Klass computer program. Although the author did not include keyboarding speed (words per minute) as an outcome objective, comparison of the data from this posttest with the pretest data was valuable. The results of the posttest as well as a comparison with the pretest appear in Table 3.

Table 3

Posttest
Keyboarding Klass Timed Writings

Student Number	Words Per Minute-- Best Score Pretest	Posttest	Increase/ Decrease
1	9.3	9.9	+ 0.6
2	8.7	9.9	+ 1.2
3	16.7	17.6	+ 0.9
4	13.8	16.5	+ 2.7
5	5.5	4.5	- 1.0
6	5.9	8.9	+ 3.0
7	7.1	15.9	+ 8.0
8	7.8	16.0	+ 8.2
9	2.7	7.1	+ 4.4
10	4.2	8.2	+ 4.0
11	3.4	5.2	+ 1.8
12	7.7	13.1	+ 5.4
13	6.0	7.7	+ 1.7
14	5.1	2.1	- 3.0
15	3.4	6.3	+ 2.9
16	6.6	9.6	+ 3.0
17	5.8	2.0	- 3.8
18	5.8	3.9	- 1.9
19	4.7	14.8	+10.1
20	7.8	9.2	+ 1.4
21	8.5	14.6	+ 6.1
22	5.1	5.2	+ 0.1

The words per minute scores on the pretest ranged from 3.4 to 16.7 and on the posttest from 2.0 to 17.6. The author anticipated the scores on the posttest would be about the same as that of the pretest because the students had the advantage during the pretest of looking at the keys. Eighteen of the 22 students demonstrated an increase in words per minute, ranging from .1 to 10.1 words per minute.

Objective 2 Results

The author used the last Reading and Writing lesson during week 12 as the measurement to see if Objective 2 was met. The author observed the students as they worked on the activities in the Running Free reading program and noted on a finger placement observation form whether or not the students used correct keyboarding techniques by keeping their fingers on home row and using proper fingers for the reaches versus using a "hunt and peck" method. The author made a notation on the observation form if a student "hunted and pecked," and the student was reminded to use proper keyboarding techniques.

The author's second objective stated: Each of the 22 targeted students will apply their keyboarding skills when they do the Reading and Writing section of the Running Free computer program. The results can be seen in Table 4. Three students were absent, therefore, the author used the data for these students from a finger placement observation form from the Reading and Writing section taken during week 9. In addition to indicating whether a student used "hunt and peck," the author included the number of times the student had to be reminded to use correct keyboarding techniques during the class period.

Table 4

Observation of Keyboarding Skills
on the Running Free Reading Program

Student Number	Correct Skills (Y/N)	# of Reminders
1	N	1
2	N	3
3 (absent)	Y	
4	Y	
5 (absent)	Y	
6	Y	
7 (absent)	Y	
8	Y	
9	Y	
10	Y	
11	Y	
12	Y	
13	Y	
14	Y	
15	Y	
16	Y	
17	N	3
18	N	4
19	Y	
20	Y	
21	Y	
22	Y	

One student was reminded once to use proper keyboarding techniques, and three students were reminded 3 or 4 times; therefore, the author did not meet the second objective.

Discussion of Results

Even though the two objectives were not met, the results of the majority of the students pleased the author. Poor effort on the part of several students seemed to be the key factor for the low test scores. Of the five students with the lowest test scores (Students 11, 14, 16, 17, 18), three of them (Students 16, 17, and 18) had the three lowest grades on the mnemonic project and one (Student 11) did not even hand in a project. Additionally, Students 17 and 18 habitually watched their fingers while they typed despite numerous reminders from the author and the fourth grade teacher. Students 14, 17, and 18 each had a lower words-per-minute rate on the Keyboarding Klass posttest than on their pretest. Student 18 in particular, had a negative attitude in general, and the author and the fourth grade teacher discussed this with the parent at a parent-teacher conference.

Students 1 and 2 met the requirements for Objective 1 but not for Objective 2 because they were observed "hunting and pecking." Both of these students, especially Student 2, had the ability to type by touch because they demonstrated it on other occasions. However, both of these students had the tendency to try to get their reading assignment completed quickly and often opted to take shortcuts with their keyboarding skills. Student 14 displayed good effort and just needed some extra remedial time on the keyboard. Student 14 was generally one of the last ones to get started, not out of a rebellious attitude, but rather, due to a very laid-back, easy-going, slow and cautious manner; therefore, limiting practice time.

Although the practicum did not meet the stated objectives, the author determined that the practicum plan succeeded because the students who put good effort into all activities (the majority) succeeded. The author concluded that the objectives were not met because the author's objectives were set too high and did not take into account uncooperative student attitudes. The "successful" students' scores ranged from a low of 88 percent to a high of 100 percent

accuracy, well above the 80 percent accuracy objective established in Objective 1.

The mnemonic story served a useful purpose in the introduction of the entire alphabetic keyboard at one time. The games added diversity to the normal classroom procedure, were a good review, and were enjoyed by the students. Most of the students did an excellent job on the mnemonic project.

CHAPTER V

Recommendations

The author plans to include the practicum's activities with minor procedural changes in future teaching assignments that require keyboarding. The author will assign the mnemonic project as a homework assignment. The author will send a letter home to the parents explaining the mnemonic project, and hopefully, parental supervision in addition to reminders from the author and fourth grade teacher will help the students complete their assignments.

Because every class usually has a small number of students who are uncooperative and do not try to achieve, the author concludes that individual testing of students, though time-consuming, is essential to determine whether or not the students learned the keyboard. Once the testing is completed, the author sees the need to provide remedial work for the students who do not have the required keyboarding proficiencies. For future keyboarding classes, the author will prepare a form that the students will use for individualized

remedial work using the UltraKey computer program. The author will list the UltraKey lessons and will highlight the particular lessons that need to be mastered on the remedial form for each student. When the students complete a highlighted lesson, the author will instruct them to record the date next to the lesson number on the form. When the students complete all of the highlighted remedial work, the author will retest them on another alphabetic sentence using the same procedure as for the practicum implementation test.

The author plans to discuss the results of the practicum with the fourth grade teachers for input and suggestions for improvement. The author will recommend to the principal the continued use of this practicum plan for incoming fourth grade students. The author will give this year's fourth grade students additional keyboarding practice next year when they are in the fifth grade so they can continue to improve their skills.

The author will distribute copies of the final report of the practicum to the principal and the high

school computer teacher. Copies will also be made available to other teachers at the practicum site, to schools affiliated with the practicum site's accrediting agencies, or other schools upon request. Other master's degree interns can access this practicum through the network established at the university where the author will submit the final report.

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Appendices

Appendix A

Practicum Software Evaluation Forms

Practicum Software Evaluation Form

AUTHOR: Scott, Foresman and Company

TITLE: Running Free

CHECK ALL THAT APPLY

TYPE:
- ___ Academic Game
- ___ Administrative
- ✓ Test/Diagnostic
- ✓ Problem Solving
- ___ Drill and Practice
- ___ Simulation
- ___ Tutorial
- ___ Other

LEVEL: ___ Preschool ___ K-3 ✓ 4-6 ___ 6-8 ___ 9-12 ___ Adult

PURPOSE: ___ Remediation ___ Developmental ✓ Enrichment

HARDWARE: Computer: Apple IIe K Ram required: 64 Color: (Y) N

Number of Drives: 1 Printer: Y (N) Other: _____

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	(Y) N NA
3. Stereotype-free (race, ethnic, sex, etc.)	(Y) N NA
4. Content adaptable to varied instructional strategies	Y N (NA)
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	(Y) N NA
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	Y (N) NA
12. Program self-paced and controls the sequence	Y N (NA)
13. Entry level prerequisites specified	Y N (NA)
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	(Y) N NA
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	(Y) N NA
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	(Y) N NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	(Y) N NA

7/92

Practicum Software Evaluation Form

AUTHOR: Silver Burdett Company

TITLE: Spellagraph

CHECK ALL THAT APPLY

TYPE: ✓Academic Game ___Drill and Practice
___Administrative ___Simulation
___Test/Diagnostic ___Tutorial
___Problem Solving ___Other

LEVEL: ___Preschool ___K-3 ✓4-6 ___6-8 ___9-12 ___Adult

PURPOSE: ___Remediation ___Developmental ✓Enrichment

HARDWARE: Computer: Apple IIe K Ram required: 64 Color: (Y) N

Number of Drives: 1 Printer: Y N Other: _____

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	(Y) N NA
3. Stereotype-free (race, ethnic, sex, etc.)	(Y) N NA
4. Content adaptable to varied instructional strategies	Y N (NA)
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	Y N (NA)
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	(Y) N NA
12. Program self-paced and controls the sequence	Y N (NA)
13. Entry level prerequisites specified	Y N (NA)
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	(Y) N NA
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	(Y) N NA
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	(Y) N NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	(Y) N NA

7/92

Practicum Software Evaluation Form

AUTHOR: Davidson

TITLE: Math Blaster Plus

CHECK ALL THAT APPLY

TYPE: ___Academic Game ✓Drill and Practice
___Administrative ___Simulation
___Test/Diagnostic ___Tutorial
___Problem Solving ___Other

LEVEL: ___Preschool ✓K-3 ✓4-6 ___6-8 ___9-12 ___Adult

PURPOSE: ✓Remediation ___Developmental ___Enrichment

HARDWARE: Computer: Apple IIe K Ram required: 128 Color: (Y) N

Number of Drives: 1 Printer: (Y) N Other: _____

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	(Y) N NA
3. Stereotype-free (race, ethnic, sex, etc.)	(Y) N NA
4. Content adaptable to varied instructional strategies	(Y) N NA
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	(Y) N NA
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	(Y) N NA
12. Program self-paced and controls the sequence	Y N (NA)
13. Entry level prerequisites specified	(Y) N NA
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	(Y) N NA
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	(Y) N NA
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	(Y) N NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	(Y) N NA

7/92

Practicum Software Evaluation Form

AUTHOR: Developmental Learning Materials

TITLE: Meteor Multiplication

CHECK ALL THAT APPLY

TYPE: ✓Academic Game ✓Drill and Practice
___Administrative ___Simulation
___Test/Diagnostic ___Tutorial
___Problem Solving ___Other

LEVEL: ___Preschool ___K-3 ✓4-6 ___6-8 ___9-12 ___Adult

PURPOSE: ✓Remediation ___Developmental ___Enrichment

HARDWARE: Computer: Apple K Ram required: 48 Color: (Y) N

Number of Drives: 1 Printer: Y (N) Other: ___

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	Y N (NA)
3. Stereotype-free (race, ethnic, sex, etc.)	Y N (NA)
4. Content adaptable to varied instructional strategies	Y N (NA)
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	(Y) N NA
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	(Y) N NA
12. Program self-paced and controls the sequence	Y (N) NA
13. Entry level prerequisites specified	(Y) N NA
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	Y N (NA)
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	Y N (NA)
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	Y (N) NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	(Y) N NA

7/92

Practicum Software Evaluation Form

AUTHOR: Mastery Development

TITLE: Keyboarding Klass

CHECK ALL THAT APPLY

TYPE: ___Academic Game ___✓Drill and Practice
___Administrative ___Simulation
___Test/Diagnostic ___✓Tutorial
___Problem Solving ___Other

LEVEL: ___Preschool ___K-3 ___✓4-6 ___✓6-8 ___9-12 ___Adult

PURPOSE: ___Remediation ___✓Developmental ___Enrichment

HARDWARE: Computer: Apple IIe K Ram required: 64 Color: (Y) N

Number of Drives: 1 Printer (Y) N Other: _____

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	(Y) N NA
3. Stereotype-free (race, ethnic, sex, etc.)	(Y) N NA
4. Content adaptable to varied instructional strategies	Y N (NA)
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	(Y) N NA
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	(Y) N NA
12. Program self-paced and controls the sequence	Y N (NA)
13. Entry level prerequisites specified	Y N (NA)
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	(Y) N NA
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	(Y) N NA
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	(Y) N NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	Y (N) NA

7/92

Practicum Software Evaluation Form

AUTHOR: Bytes of Learning

TITLE: UltraKey

CHECK ALL THAT APPLY

TYPE:
- ___Academic Game
- ___Administrative
- ___Test/Diagnostic
- ___Problem Solving
- ✓Drill and Practice
- ___Simulation
- ✓Tutorial
- ___Other

LEVEL: ___Preschool ___K-3 ✓4-6 ___6-8 ___9-12 ___Adult

PURPOSE: ___Remediation ✓Developmental ___Enrichment

HARDWARE: Computer: Apple IIe K Ram required: 64 Color: (Y) N

Number of Drives: 1 Printer: Y N Other: _____

	Circle Rating
CONTENT	
1. Program has educational value	(Y) N NA
2. Grammar accurate and free of syntax errors	(Y) N NA
3. Stereotype-free (race, ethnic, sex, etc.)	(Y) N NA
4. Content adaptable to varied instructional strategies	(Y) N NA
INSTRUCTIONAL QUALITY	
5. Purpose of the program well defined	(Y) N NA
6. Defined purpose achieved	(Y) N NA
7. Presentation of content clear and logical	(Y) N NA
8. Level of difficulty appropriate for target audience	(Y) N NA
9. Sequence organized for selected developmental steps	(Y) N NA
10. Graphics, color, sound appropriate for instruction	(Y) N NA
11. Student controls rate and sequence of presentation	(Y) N NA
12. Program self-paced and controls the sequence	Y N (NA)
13. Entry level prerequisites specified	Y N (NA)
14. Program user-friendly, easy-to-read, understand	(Y) N NA
TECHNICAL QUALITY	
15. Instructional text formatted/sized for easy reading	(Y) N NA
16. Students easily operate program independently	(Y) N NA
17. Relevant computer capabilities used	(Y) N NA
18. Program reliable and student-proof	(Y) N NA
19. Adequate error trapping	(Y) N NA
20. Easy escape from program provided	(Y) N NA
21. Record keeping/printouts of student progress	(Y) N NA
DOCUMENTATION	
22. Manuals available and user-friendly	(Y) N NA
23. Clear operating instructions and trouble shooting	(Y) N NA
24. Constant reference to documentation unnecessary	(Y) N NA
25. Table of Contents, Index, Glossary of Terms provided	(Y) N NA

7/92

Appendix B

Memo from Principal

Appendix B

Memo from Principal

TO: Beverly Chubb
FROM: Principal
DATE: July 9, 1993
SUBJECT: Keyboarding--1993/94 School Year

To confirm our discussion in June, we will extend the school day by 15 minutes for the incoming fourth grade classes. The dismissal time will be changed from 2:45 to 3:00. A notice will be sent home to the fourth grade parents in their "back-to-school" informational packets.

It is agreed that the extra time will be used to teach keyboarding skills as well as to give the students adequate time to practice such skills. It is acknowledged that the extra 15 minutes at the end of the day may not necessarily be the time set aside for keyboarding due to scheduling constraints. Please work out an acceptable schedule with the teachers using the additional 1 1/4 hours available.

After discussing the need for keyboarding skills with you and the fourth grade teachers, it was agreed by all involved that the ideal time to introduce keyboarding at our facility is the fourth grade. Both fourth grade teachers are supportive of your efforts and have expressed that keyboarding skills will be valuable to their students, particularly for their reading program. It was further decided by all involved that the keyboarding session should be graded. We will use the grading scale of G = good, S = satisfactory and N = needs improvement.

I believe that it is essential for us to equip our students with computer skills in this age of technology. I look forward to anticipated good results with the fourth grade students this coming school year.

PROVIDING A CHRISTIAN, CO-EDUCATIONAL CLIMATE FOR LEARNING
Florida 33308 Phone
Accredited by the Southern Association of Colleges and Schools and by the Florida Council of Independent Schools

Appendix C

Keyboarding Klass Record Sheet

Appendix C

Keyboarding Klass Record Sheet

NAME _____ DATE _____

TIMED WRITING #1

SECONDS	
WORDS PER MINUTE	
BEST	AVERAGE

TIMED WRITING #2

SECONDS	
WORDS PER MINUTE	
BEST	AVERAGE

TIMED WRITING #3

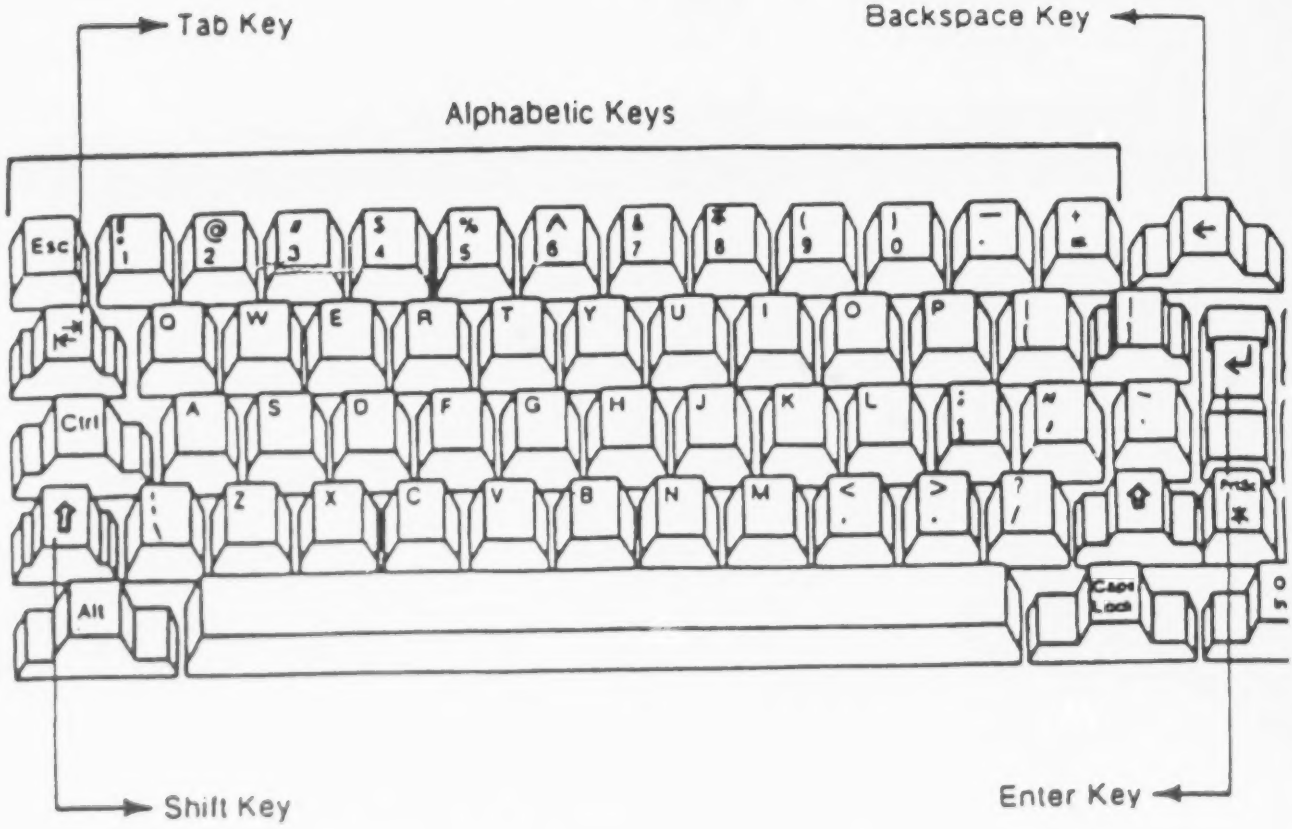
SECONDS	
WORDS PER MINUTE	
BEST	AVERAGE

Appendix D

Keyboard Chart

Appendix D

Keyboard Chart



Appendix E

Timeline for Activities

Appendix E

Computer Lab Activities

Keyboarding

Week 1
1. Mnemonic lesson (60 min.)

Week 2
1. Mnemonic review (15 min.)
2. Mnemonic review (15 min.)
3. Introduction to UltraKey program--Open File (30 min.)

Week 3
1. UltraKey--Lesson 1a and 1b (15 min.)
2. Lesson 1 drill sheet (15 min.)
3. Running Free reading lesson

Week 4
1. UltraKey--Skill check--Lesson 1 (15 min.)
2. UltraKey--Lesson 2 (15 min.)
3. Mnemonic review (Card "pop-up" game) (15 min.)
   Lesson 2 drill sheet (15 min.)

Week 5
1. UltraKey--Skill check--Lesson 2 (15 min.)
2. UltraKey--Lesson 3 (15 min.)
3. Keyboard quiz (15 min.)
   Lesson 3 drill sheet (15 min.)

Week 6
1. UltraKey--Skill check--Lesson 3 (15 min.)
2. UltraKey--Lesson 4 (15 min.)
3. Running Free reading lesson

Week 7
1. Lesson 4 drill sheet (15 min.)
2. UltraKey--Skill check--Lesson 4 (15 min.)
3. Mnemonic review (Secret message game) (15 min.)
   UltraKey--Lesson 5 (15 min.)

Week 8
1. Lesson 5 drill sheet (15 min.)
2. UltraKey--Skill check--Lesson 5 (15 min.)
3. Introduce lesson on shift keys (15 min.)
   Right shift drill sheet (15 min.)

Week 9
1. Right shift drill sheet (15 min.)
2. Left shift drill sheet (15 min.)
3. Running Free reading lesson

Week 10
1. Class cancelled
2. UltraKey--Lesson 6 (15 min.)
3. Shift key review (15 min.)
   UltraKey--Lesson 6 (15 min.)

Week 11
1. Lesson 6 drill sheet (15 min.)
2. No class--Parent/Teacher conferences
3. Mnemonic review (Review story) (15 min.)
   UltraKey--Skill check--Lesson 6 (15 min.)

Week 12
1. UltraKey--Lesson 7 (15 min.)
2. Lesson 7 drill sheet (15 min.)
3. Running Free reading lesson

Week 13
1. UltraKey--Skill check--Lesson 7 (15 min.)
2. UltraKey--Lesson 8 (15 min.)
3. No class--Thanksgiving

Week 14
1. Lesson 8 drill sheet (15 min.)
2. UltraKey--Skill check--Lesson 8 (15 min.)
3. UltraKey--Lesson 9 (15 min.)
   Begin individual testing

Week 15
1. Lesson 9 drill sheet (15 min.)
2. UltraKey--Skill check--Lesson 9 (15 min.)
3. Keyboarding Klass Posttest
   Conclude individual testing

Appendix F

Narrative of Mnemonic Story

Appendix F

Narrative of Mnemonic Story

Left-Hand Keys: Close your eyes and imagine...

You are meeting your friend Adam (gently tap the A key with your left pinkie and visualize a boy whom we will call Adam). You and Adam each have a shiny quarter (reach your A finger up and tap the Q key and picture a quarter--to remember the quarter better, you could picture a huge quarter that you are holding in your hand). You and Adam (tap the A) take your quarters (tap the Q) down the street to the Zoo (reach your A finger down and tap the Z key and picture the entrance to a zoo). It just happens that the admission price to the zoo is one quarter. (Reach your A finger up to the A key, tap the A and picture Adam--reach up and tap the Q key and see the shiny quarter--reach down and tap the Z key and picture yourself and Adam using the quarter to pay to enter the zoo).

Put your A finger back on the A key and picture yourself and Adam entering the zoo, walking over to the right and seeing a seal. (Now, tap the S key with your left ring finger and picture a cute, black seal). The

seal's name is Sammy, and Sammy the seal is in a pool of water (reach your S finger up to the W key and tap the W gently while picturing a pool of crystal clear water). In the middle of the pool of water are some rocks and there is an interesting slide coming down from the top of the rocks into the water. The interesting thing about the slide is that it is shaped in the form of a big X (reach down with your S finger to the X key, tap it gently, and picture Sammy the seal--tap S--climbing up the rocks with his flippers). Watch Sammy sliding down one side of the X-shaped slide (tap X) and splashing into the pool of water (reach up and tap W). Now, visualize Sammy the seal swimming in the water over to the other side of the rocks where he climbs up to the top of the rocks and over to the top of the other side of the X-shaped slide. Watch Sammy the seal slide down the X-shaped slide (reach down and tap X) and watch him splash into the water (reach up and tap W). (Tap S for Sammy the seal, reach up and tap W for water; tap S again and reach down and tap X for the X-shaped slide and picture

that image again in your mind). Place your finger back on the S key.

You and Adam walk over to the right where you notice a pretty deer (tap the D key with your left middle finger and picture a deer). The deer is looking at you with its big brown eyes and begins to walk over to you. As the deer walks over to you, you notice it looks a little hungry--it probably wants something to eat (reach your D finger up and gently tap the E key for "eat"). You reach down into your pocket and feel some candy (reach your D finger back to D and then down and tap the C key and picture yourself taking the candy out of your pocket--it can be any kind of candy--if you choose your favorite kind--it will be easier to remember). Picture yourself taking the candy out of your pocket, see yourself holding out your hand to the deer (tap D) and watch as the deer eats (tap E) the candy (tap C) right out of your hand. (Again, tap the D for deer--picture the deer--reach up--tap the E for eat and picture the deer eating right from your hand the candy--reach down and tap the C--see it clearly in your mind and return your finger to the D position.)

Next, you and Adam (tap A) walk over a little to the right of where the deer (tap D) was and you see a fox (tap the F key with your left index finger for fox). The fox happens to be sitting on a wooden gate (reach your F finger over to the right and tap the G key and picture the fox sitting on a wooden gate). Foxes (tap F) are a reddish color (picture your fox with reddish fur and reach your F finger up and tap the R key for red). This particular fox has an especially red tail (tap the F key for fox; reach up and tap the R key for red, then reach over to the right of the R key and tap the T key for tail--picture your fox with an especially red bushy tail--tap R for red and T for tail). This particular fox (tap F) is very popular because he plays the violin (reach your F finger down and gently tap the V key for violin). And, he plays the violin with a very long bow (reach your F finger down to the B key for bow and tap gently). (Now, picture the fox (tap F) with the red (tap R) bushy tail (tap T) sitting on the gate (tap G), playing the violin (tap V) with a very long bow (tap B). (Return your finger to the F key.)

Now, with your eyes still closed, let's briefly review all the keys and reaches for your left hand: Tap the A key and picture yourself with Adam; reach up and tap the Q and picture the shinny quarter you and Adam each have which is your entrance fee to the zoo; reach down and tap the Z and picture yourself paying to enter the zoo. Tap the S key and see Sammy the seal; reach up and tap the W key and picture the pool of crystal clear water; picture the rocks in the middle of the pool with the X-shaped slide and reach down and tap the X key. Tap the D key and picture the deer walking over to you and eating--tap the E key--the candy--tap C--right out of your hand. Now, tap the F key and picture the fox with the red--tap R--bushy tail--tap T. Tap the F again and see the fox sitting on the gate--tap G. Tap the F again and picture the fox playing the violin--tap the V--with a long bow (tap B).

Right-Hand Keys: Close your eyes and imagine:

While you are at the zoo, you and Adam happen to see a friend of yours, a Seminole Indian, whose name is Semi (tap the SEMICOLON key with your right pinkie and picture Semi, the Seminole Indian). Semi is at the zoo today to give a talk on Seminole Indian culture. He is quite a famous speaker and very popular because he dresses in a tradition Seminole Indian outfit. One of the historic items he always brings with him when he gives these talks is a large peace pipe (reach your SEMI finger up, gently tap the P key for peace pipe and picture Semi holding a large peace pipe). Semi (tap the SEMI key) also always brings his bow and arrows; he wears the bow diagonally across his shoulder and chest (reach down and tap the DIAGONAL key while picturing the string part of the bow beginning at one shoulder and extending across his chest diagonally). (Tap the SEMI key, picture Semi, the Seminole Indian with his large peace pipe--tap P--and the string part of his bow reaching diagonally across his chest--tap the DIAGONAL key). (Return your finger to the SEMI key.)

You and Adam and Semi decide to walk over to the left where you see a beautiful lake (tap the L key with your right ring finger and visualize a beautiful lake). The three of you decide you want to toss pebbles into the lake to make O's with the ripples of the water (reach up and tap the O key) of the lake (tap the L) so you reach down and pick up a shiny black pebble that is shapped just like a round period (reach down and tap the PERIOD key). You toss the round pebble that looks like a period (tap the PERIOD) into the lake (tap L) and watch as the period pebbles drop in and create circular O's (tap O) in the water. (See yourself reaching down, picking up a period pebble (tap PERIOD), tossing it into the lake (tap L), and making O ripples in the water (tap O). (Return your finger to the L key.)

As you look around the lake, you notice a lot of people flying kites (tap the K key with your right middle finger for kite). The curious thing about the kites is that they all look the same--each kite has a big black ink mark printed on it (reach up and tap the I key for ink) and all the ink marks on the kites (tap

K) are shapped like commas (reach down and tap the COMMA key). (Picture yourself looking over the lake and seeing hundreds of kites (tap K) with black ink (tap I) commas (tap COMMA) on them--see the picture clearly in your mind--return your finger to the K key).

Finally, you decide it's time to go home. As it turns out, Semi is not only a famous Seminole Indian speaker, but he is also quite wealthy and has his own jet parked by the lake (tap the J key with your right index finger for jet). Semi offers to fly you and Adam home, which you think is a terrific idea. You and Adam get into the jet (tap J) with Semi and fly high up into the sky (tap the U key for up and picture yourself flying up into the sky). As you are flying up in the sky you look out of the window of the jet (tap J) and look down to see some magnificiant mountains (reach down and tap the M key for mountains). Pretty soon the jet (tap J) reaches your neighborhood. You look out the jet's window and see your house (reach your J finger to the left and tap the H key for house). Semi begins the descent in the jet (tap J) and heads for your yard (reach up and to the left and tap the Y

key for yard). As the jet (tap J) descends down to your yard (tap Y and see your yard), you see your house (tap H) and soon the jet (tap J) lands in a tree on top of a giant nest (reach down and to the left and tap the N key for nest and see the jet in a giant nest). You and Adam get out of the jet (tap J), climb down from the nest (tap N) in the tree, walk through your yard (tap Y), and go into your house (tap H). (Return your finger to the J key.)

Let's review the reaches of the right hand: Tap the SEMI key and visualize Semi the Seminole Indian with his peace pipe--tap P--and the diagonal bow string across his chest--tap DIAGONAL. You, Adam, and Semi walk to a lake (tap L) where you make water ripple O's--tap O--by tossing in shinny black pebbles which look like periods--tap PERIOD. You look around the lake and see people flying kites--tap K--all with black ink--tap I--commas on them--tap COMMA. It's time to go home, so you, Adam, and Semi board Semi's jet--tap J--and soar up into the sky--tap U for up--where you look down at the mountains--tap M for mountains. Soon you see your house--tap H--and the jet--tap J--lands in the yard--tap Y--in a giant nest--tap N.

Appendix G

UltraKey Skill Check Sheet

Appendix G

UltraKey Skill Check Sheet

NAME _____ DATE _____

LESSON _____

ACCURACY: _____%

SPEED: _____WPM

TYPES OF ERRORS:

_____	_____	_____	_____
Wrong Keys	Missed Keys	Extra Keys	Total Errors

ACCURACY: _____%

SPEED: _____WPM

TYPES OF ERRORS:

_____	_____	_____	_____
Wrong Keys	Missed Keys	Extra Keys	Total Errors

ACCURACY: _____%

SPEED: _____WPM

TYPES OF ERRORS:

_____	_____	_____	_____
Wrong Keys	Missed Keys	Extra Keys	Total Errors

Appendix H

Sample Drill Sheet

Appendix H

Sample Drill Sheet

DRILL SHEET LESSON 1: HOME ROW KEYS

NOTE: CAPS LOCK DOWN
A SEMICOLON (;) IS FOLLOWED BY ONE SPACE

ASDF JKL; ASDF JKL; ASDF JKL; ASDF JKL;
AAA ;;; SSS LLL DDD KKK FFF JJJ

AS A LAD; ASK DAD; A FAD; ASK JAK; DALLAS; ALASKA;
A FALL SALAD; ASK A SAD LAD; A DAD; JAK ASKS DAD;
A LAD FALLS; A LASS FALLS; A LAD ASKS A LASS;

DRILL SHEET LESSON 2: I T .

NOTE: CAPS LOCK DOWN

KIK KIK KIK KIK IK IK IK IK KIK KIK KIK
FTF FTF FTF FTF TF TF TF TF FTF FTF FTF
L.L L.L L.L L.L .L .L .L .L L.L L.L L.L

(NOTE: A period at the end of a sentence is followed by two spaces.)

IT IS A TALL LAD. A LASS TALKS. DIAL A LAD.
A LASS IS ILL. A LAD IS ILL. A DAD IS ILL.
IT IS A SALAD. IT IS A FALL SALAD. IT TALKS.

DRILL SHEET LESSON 3: O R N

NOTE: CAPS LOCK DOWN

LOL LOL LOL LOL OL OL OL OL LOL LOL LOL
FRF FRF FRF FRF RF RF RF RF FRF FRF FRF
JNJ JNJ JNJ JNJ NJ NJ NJ NJ JNJ JNJ JNJ

NOTE: Remember to space twice after a period at the end of a sentence.

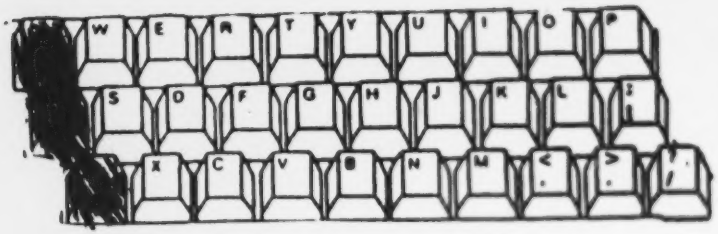
IT IS TORN OFF. TALK TO AN ANT. IT IS A TAN ANT.
TODD TALKS TO JAN. DAD IS IN A FORT IN DALLAS.
SAL IS IN ALASKA. ROSA IS IN AN INDIAN FORT.

Appendix I

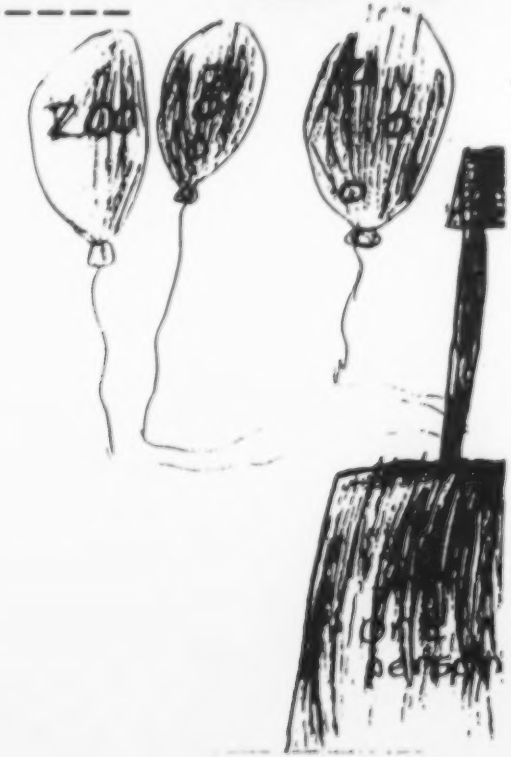
Sample of Two Students' Mnemonic Sketches

Appendix I

Sample of Two Students' Mnemonic Sketches



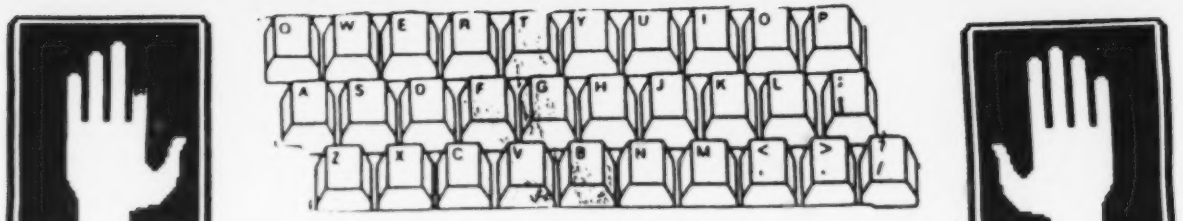
Home Row Key A_____



Name

I_. ___

BEST COPY AVAILABLE



Home Row Key F____

Fox
Gate
Pow
Violin
tail
Red

Name _____

Appendix J

Keyboard Table Top

Appendix J

Keyboard Table Top

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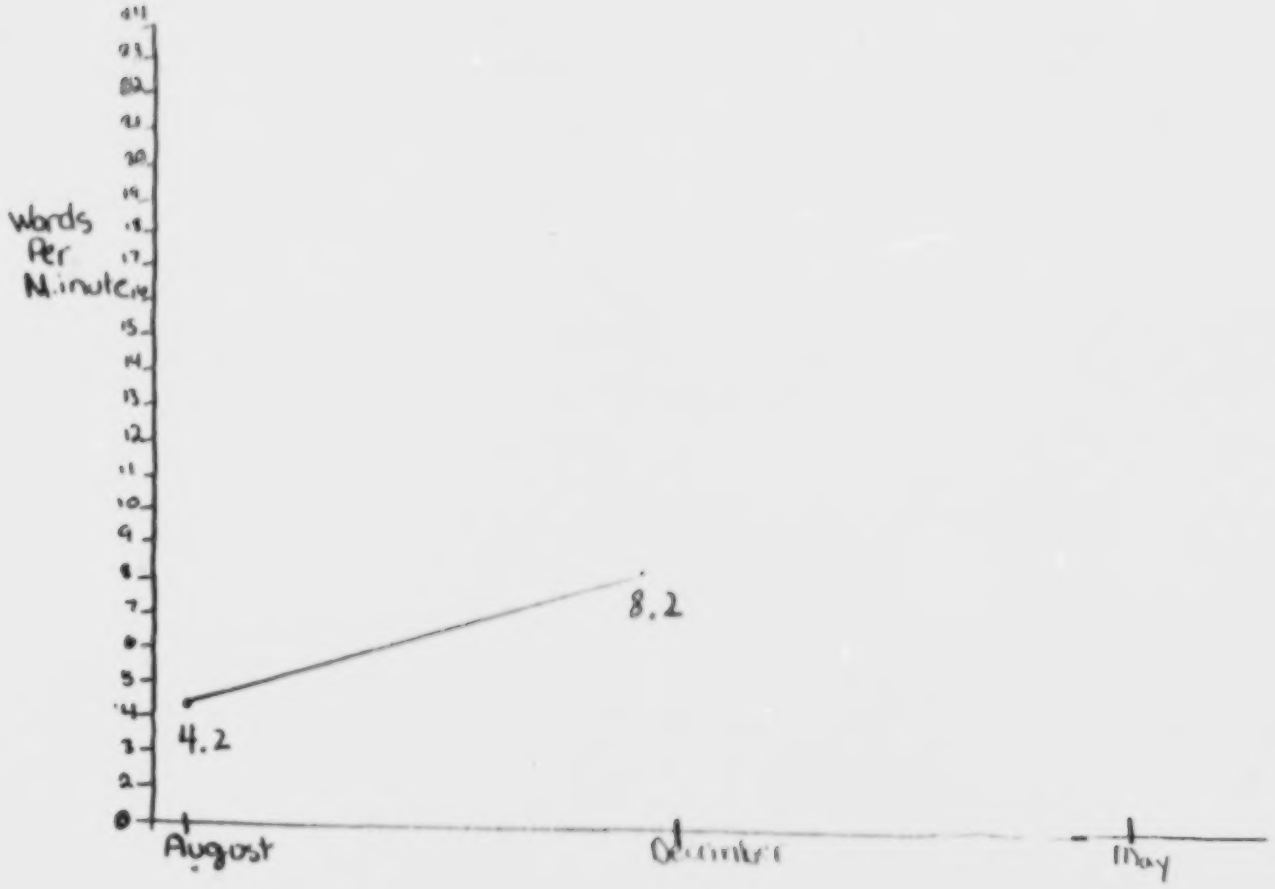
Appendix K

Sample Student Graph

Keyboarding Klass - Name.



Appendix K:
Sample Student Graph